

EFFECT OF SUPPORT ON THE ACTIVITY OF MoVCeZr CATALYST FOR PROPANE AMMOXIDATION REACTION

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ABSTRACT

Mixed metal oxide catalysts based on Mo-V have been known as the most active and selective in the ammoxidation of propane to ACN. A series of MoVCeZr (5% wt/wt) supported with MOR, TiO₂ and MgO have been prepared by incipient wetness impregnation method for propane ammoxidation reaction to ACN. The catalyst was calcined in a two steps calcination process in static air between 350-600 oC for a total of 10h. The surface area and pore size of these catalysts were measured using physical adsorption of nitrogen following Brunauer, Emmet and Teller (BET) equation. The textural and morphological of these catalysts were determined using scanning electron microscopy (SEM) and X-ray Diffraction (XRD). The activities of all catalysts were tested using a fixed-bed reactor with online gas chromatography (GC) at 420 °C and atmospheric pressure in the presence of 0.5 ml catalyst with composition consisting of 5.8 : 7 : 17.4 (propane : ammonia : air) and helium as carrier to give a total flow of 120 ml. Results show that MoVCeZr supported with MOR, TiO₂ and MgO give a better conversion due to the surface area and pore size characteristic of catalyst.

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